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JOURNAL

OF THE

New York Entomological Society.

EDITED BY WILLIAM MORTON WHEELER.

Publishes articles relating to any class of the subkingdom Arthropoda, subject to the acceptance of the Publication Committee. Original communications in this field are solicited.

PROCEEDINGS OF THE NEW YORK ENTOMOLOGICAL SOCIETY.

MEETING OF MARCH 5, 1907.

Held at the American Museum of Natural History. Vice-President E. B. Southwick presided with twelve members and three visitors present.

Mr. Engelhardt related his collecting experiences on a trip made during the past summer along the St. Lawrence and Saguenay Rivers in Canada. He exhibited two boxes of insects and a number of photographs taken in the region. He spoke of his visit to Toronto, the Thousand Islands, Montreal, Ottawa, Quebec, the Saguenay River and Tadmsac. He spent two weeks at Tadmsac, a small fishing village, located at the junction of the Saguenay and St. Lawrence Rivers, where he did considerable insect collecting. This region is of especial interest as showing a great similarity to the sub-alpine region of the White Mts. of New Hampshire. Insects of all orders were found fairly abundant. On returning Mr. Engelhardt visited the White Mts. where, on top of Mt. Washington, he found aquatic insects very abundant in numerous small pools.

Mr. Schaeffer exhibited some Cicindelidæ which showed peculiar color variations. Among these were *C. oregona* var. *maricopa*, *C. purpurea*, obtained by Mr. Doll and Mr. Engelhardt in Utah, *C. perviridis* from California, and *C. obsoleta* from Arizona.

As Mr. Joutel was absent the reading of his paper was postponed but Mr. Southwick announced the title as, "The Mating Instinct Among Insects" and invited the members to discuss the subject.

Mr. Davis stated that while collecting at Newfoundland, N. J., he had cut from an ash log some immature longicorn beetles (*Bellemira scalaris*) which he placed in a bottle and during the night they copulated. They would not have been mature for two weeks at least.

Mr. Davis also related an account of the marriage flight of bumble-bees (*Bombus virginicus*) which he had been fortunate enough to observe.

Professor Wheeler related some interesting facts about the copulating habits of

some of the smaller Diptera. In one family (Dolichopodidæ) the typical males are remarkable in the character of the lengthened and narrow face as well as the modified fore legs and tarsi. The males in copulating clap these widened tarsi over the eyes of the females. Another family of Diptera (Empididæ) which live in the mountains and the northern woods, flying in swarms, execute a peculiar dance, which is different in the different species and may be represented diagrammatically.

Mr. Harris related how a number of years ago while living at Saratoga Springs, N. Y., where the winters were cold and the spring season late, he had put a freshly emerged female of *Promethia* moth on a *Syringa* bush some time early in May and in a short time found a male moth had been attracted by the female. It being much too early for these moths to hatch out of doors in that locality Mr. Harris could not account for its appearance.

Mr. Schaeffer spoke of an instance where a great many male *Promethia* moths had been attracted by placing the female cocoons outside. Mr. Dickerson mentioned a similar case of the attraction of male moths by the female cocoons.

Mr. Engelhardt told how one ingenious man had fed his ducks at Glendale, L. Is., by attracting swarms of male *Promethia* moths by imprisoning the female in a box on the ground.

Mr. Schaeffer told of seeing the male *Mutilla* in Arizona clasping the female and flying with her upon the bushes to copulate.

Mr. Dickerson stated that Dr. Raleigh had liberated marked male and female *Promethia* moths several miles apart in Chicago and that they found each other clear across the city.

Mr. Barker spoke of finding the nymphs of certain locusts *in coitu* quite common in southern Arizona. Mr. Engelhardt had seen the same thing in Utah.

Mr. Engelhardt and Mr. Doll while in Utah had exposed the female of a moth (*Myrmothrus tibialis*) and attracted thereto one hundred and fifty males.

Professor Wheeler exhibited a small collection of ants which Mr. Schaeffer had collected in Brownsville, Texas, and southern Arizona. Though small the collection was of interest because it contained six species new to the United States and four species new to science.

Mr. Matausch exhibited some excellent pencil drawings of Membracidæ.

Mr. Beyer exhibited a collection of Cleridæ many of which were rare. He spoke briefly of their habits.

Mr. Zabriskie exhibited some Hymenoptera, the more important of which were *Pompilus atrox*, male and female, and *Pompilus* sp. with a large spider which it had killed and was dragging to its nest. To show an interesting phase of insect study he read an extract from "Wasps, Social and Solitary" by George and Elizabeth Peckham.

In connection with the extract read by Mr. Zabriskie, Mr. Schaeffer related an account of a combat which he witnessed in Texas between a tarantula and one of these large wasps.

MEETING OF MARCH 19, 1907.

Held at the American Museum of Natural History. President C. W. Leng in the chair with eleven members and four visitors in attendance.

The librarian, Mr. Schaeffer, read a list of exchanges recently received as follows:

- Horæ Societatis Entomologicæ Rossicæ, XXXVII, Nos. 3 and 4.
New Bruchidæ with Notes on Known Species. Chas. Schaeffer. Bull.
Brooklyn Inst. Museum, I, No. 10.
Deutsche Entomolog. Zeitschrift, 1907, No. 1.
Mittheilungen d. Naturhist. Museums in Hamburg, XXXIII, No. 2.
Proc. Amer. Acad. Arts and Sciences, XLII, No. 19.
Wiener Entomol. Zeitung, XXVI, Nos. 1 and 2.
An Investigation of Evolution in Chrysomelid Beetles of the Genus Leptinotarsa.
W. L. Tower. Carnegie Institute, Washington, 1906.
Verhandlungen d. k. k. zool.-bot. Gesellschaft. Wien, LVI, No. 10.
Proc. Amer. Philos. Soc., XLV, No. 184.
Canadian Entomol., XXXIX, No. 3.
Acta Societatis Fauna et Flora Fennica, 1905, No. 25.
Middlebänder Soc. p. Fauna et Flora Fennica, 1906.
Trans. of the Sapporo Nat. His. Soc., I, Pt. I, Sapporo, Japan.
Mr. Harris gave an account of a collecting trip to Knoxville, Tenn., and
Ashville, N. C.

Mr. Schaeffer said that he had found the black form *Cicindela nigrita* on white beaches as well as further inland but it is much more common on Long Island than on New Jersey beaches. Mr. Harris stated that his experience had shown that *C. nigrita* is very local and he had found them on Long Island shore where there were no mud flats as at Far Rockaway.

Mr. Southwick asked if there was any resemblance between the Cicindelas and the kind of soil they frequented as seems to be the case with members of the genus *Salda* of the Hemiptera. Mr. Leng replied that such was not usually the case, although there were some exceptions as in *C. dorsalis* and *C. lepida*. Mr. Davis said that from their habits there was not so much need of protective coloration as there was for aggressive coloration.

Mr. William T. Davis exhibited eight species of galls the contents of which had been eaten by mice and birds. In the interesting and valuable article by Melville T. Cook on "Galls and Insects Producing Them" published in the Ohio Naturalist, the author states that "animals make but very little use of galls for food." In commenting upon this Mr. Davis remarked that galls like *Amphibolips confluentus* are often opened by birds, and such low growing galls as *Rhodites radicum* are attacked by mice with equal frequency. Also the egg bags of the large spider *Argiope* are opened by crows and mice, and the young spiders which hatch in the fall and hibernate in these bags during the winter are often devoured. Specimens of egg bags from Staten Island, opened by these animals, were exhibited.

Mr. Beyer exhibited a box containing practically all of the American members of the genus *Chrysomela*, stating that he had collected eleven species of this genus in the Huachuca Mts., Arizona.

Mr. Bischoff showed a box containing several hundred specimens of Coleoptera taken at Lakehurst, N. J., during three days early in July, 1906. Many good species were represented in the lot.

Mr. Zabriskie exhibited a large Chalcid parasite (*Leucospis affinis* Say) showing the peculiar position of the ovipositor lying in a groove along the back, instead of being placed ventrally as is usual among Hymenoptera. The male of this species

is very rare. This had been bred from galls on black locust infested by a moth (*Ecdytolopha insiticiana* Zell.).

MEETING OF APRIL 2, 1907.

Held at the American Museum of Natural History. President C. W. Leng in the chair with sixteen members and six visitors present.

The librarian reported the receipt of the following exchanges :

Berliner Entomol. Zeitschrift, LI, Nos. 2 and 3.

Zeitschrift f. wissenschaftliche Insektenbiologie, III, No. 1.

Proc. Amer. Acad. Arts and Sciences, XLII, Nos. 20-25.

Dr. Felt exhibited a large series of original photomicrographs illustrating the wing venation and genitalia of Cecidomyiidae. He is engaged in preparing a monographic account of this group, and stated that these flies vary greatly in structure. Some 750 European forms have been listed and it is probable that our fauna is somewhat richer, possibly totaling 1,000 or 1,200 species. The habits and general biology of the group together with the methods of collecting were discussed in an informal way.

Professor Wheeler exhibited photographs and specimens of the agricultural ants which occur in the arid regions of the southwest. These possess a curious arrangement of long hairs underneath the head similar to those which have been found in the ants of the Sahara. He had thought that these were adaptations for carrying water, but among the specimens of a species kept in captivity he could find no such use made of the hairs. He suggests that these are more likely used for toilet purposes, acting as a brush to assist the strigil of the leg. Professor Wheeler also exhibited some excellent photographs of ants.

Mr. Joutel spoke of the finding of a Ptinid beetle (*Gibbium scotias*) at the Produce Exchange by Mr. Davis. This is an unusually rare species.

MEETING OF APRIL 16, 1907.

Held at the American Museum of Natural History. President C. W. Leng in the chair with thirteen members and two visitors present.

The librarian reported the receipt of the following exchanges :

A Collection of Ants from British Honduras by Wm. M. Wheeler. Bull. Am. Mus. Nat. Hist., XXIII, pp. 271-277.

Canadian Entomologist, XXXIX, No. 4.

Verhandl. d. k. k. bot.-zool. Gesellschaft. Wien, LVII, No. 1.

Zeitschrift f. Wissenschaftliche Insektenbiologie, III, No. 2.

The Insect World, XI, No. 3.

Georgia State Board of Entomology, Bull. No. 23.

Mr. Davis of the field committee reported that there would be a society excursion to Newfoundland, N. J., on April 26.

Professor Wheeler gave an interesting talk on the genus *Formica* and said in part as follows :

The genus *Formica* was the only one recognized by Linnæus as including the various species of ants ; but gradually it became divided, first by Latreille and Fabricius, and later by others until now it includes only a small number of our species. All species belonging to it are found in the North Temperate Zone, none extending as

far south as the Equator and they are of wide distribution. This genus can be separated into five groups, all of which are found in North America. These groups center about *F. sanguinea*, *exsecta*, *rufa*, *pallidefulva* and *fusca*. The genus apparently originated in the Rocky Mountains, probably in Colorado as the species belonging to it are found there in greatest number and variety. It is unfortunate therefore that the European forms should have been known and described before those of America, as they are probably only varieties of the latter. The consideration of the different groups is interesting because of the differences in habit. The *sanguinea* group represented by the well-known *sanguinea* form of Europe, which differs slightly from our own, includes a number of distinct species and the commonest form with us is *rubicunda*. The ants belonging in this group can be distinguished by the distinctly notched clypeus. The *exsecta* group is represented by the European *exsecta*. In this division the clypeus is entire but the posterior margin of the head is incised and the species have the habit of cutting off the heads of their foes. The *rufa* group is represented by *rufa* and a few other forms in Europe and many forms in this country and could be again divided into smaller groups. *Rufa* forms are exceedingly abundant in Colorado; and in the Rocky Mountains in general, at an altitude of between 7,000 and 9,000 feet. Some of these forms very closely resemble the European *rufa*, *pratensis* and *truncicola*. The *pallidefulva* group which is recognized by the very slender thorax and the small colonies is not represented in Europe. *F. schaufussi* is the common species of this division and it is widely distributed in the United States east of the Rocky Mountains. The *fusca* group is the most widely distributed of all and is represented throughout the northern hemisphere. It is represented in Alaska and in Colorado in the mountains up to an altitude of 12,000 ft. In the west *fusca* runs into many varieties, while *subsericea* is one of the commonest forms with us in the eastern states. The species of this group are recognized by the slender antennæ. Concerning the habits of the insects Dr. Wheeler said that the forms belonging to the *pallidefulva* and *fusca* groups were widely distributed while those belonging to the other groups — *sanguinea*, *exsecta* and *rufa* — were parasitic upon them and hence sporadic in occurrence. In studying a species — *difficilis* — of one of the parasitic groups (*microgyna*), in which the queens are of very small size, it was found that the queen layed its eggs in the nest of *schaufussi*, the parasitized forms, where they were cared for by the workers of *schaufussi* which in turn died off owing to the fact that there was no queen of the latter to continue the species. In Tunis Dr. F. Santschi found a species of *Bothriomyrmex* parasitic in the nest of *Tapinoma*. In this case the queen of the former kills that of the latter and rests upon its dead body where it is immune to attack. Gradually it acquires the odor of the new nest and is adopted by the *Tapinoma* workers, who die off in due time, because they have no queen to propagate their species. Huber found that the workers of *sanguinea* went out and robbed the nest of *fusca* of young, brought them to their own nests and reared them. In experimenting with these forms in Connecticut last summer Dr. Wheeler found that by removing the wings of the *sanguinea* queens he changed their instinct and behavior. When new queens were placed with *fusca* workers, the latter attacked the queen *sanguinea* but later she retaliated, killed them off and gathered the cocoons of *fusca* and cared for them. It is probable that under normal conditions a weak colony is sought by the *sanguinea* queen for the purpose of establishing her own formicary. Thus, the queen possesses all the

instincts shown by the workers, and that the workers inherit their peculiar instincts from the queen.

The question of ants protecting plants was discussed by several members as was also that of the nesting habits of several species.

A few boxes containing some of the species of *Formica* were exhibited.

Mr. Schaeffer next spoke on Histeridæ and told of some interesting studies he had been making in this group. As a rule, he said, not much attention had been paid to this family. In considering the species the early authors had used the elytral striæ for specific separation. These he had found quite constant although in *Saprimus fimbriatus* and an allied form he had found some variation. The humeral striæ, however, vary to a considerable extent and if based upon these characters two of our species would have to be omitted from the list because they were found to be synonymous with others. Casey, in his studies, has laid some stress upon the punctuation of the pygidium, but Mr. Schaeffer found this to vary considerably in some instances and not to be altogether reliable. Notes were given concerning several of the species of the genus *Hololepta*. Altogether Mr. Schaeffer had found that when carefully studied these beetles exhibited some good specific characters and were not so difficult to determine as at first appeared. When questioned in regard to the habits of the insects Mr. Schaeffer said that they were carnivorous and that the character of the mandibles showed this to be the case. As a rule they were found in excrement or decaying matter but apparently they were not feeding on these substances but upon the larvæ of various kinds found in them. In the west he had taken *Hololepta yuccataa* in the stems of the Yucca and *H. cacti* in decaying *Opuntia* between the dead and living tissue where dipterous and other larvæ were also found.

Mr. Davis stated that so far as he knew there were only three records in this country of *Histeridæ* having been observed feeding upon caterpillars. Mr. Joutel said that at Fort Lee he had observed a species doing this.

A box containing a number of Histeridæ was exhibited.

Mr. Dickerson made a few brief remarks on root maggots. He said there were several species of flies of the family Anthomyidæ, the larvæ of which were known as root maggots because of their habit of feeding upon the roots of plants. Several species have been found injurious both in Europe and America and two of these — the onion maggot feeding on the roots of onions and the cabbage maggot feeding on the roots of cabbage and several other cruciferous plants — had been particularly troublesome in New Jersey and several other states during the past few years. He told something of their habits and life history and said that owing to the fact that they lived under ground they were difficult to reach with insecticides of any sort. Two classes of remedies have been recommended. The one known as preventives, consists of placing something around the plant, such as a tarred paper disk, to prevent the eggs from being laid about the stem or if laid to prevent the maggots from getting to the roots. The other remedies might be termed destructive and consist of spraying or pouring such chemicals as carbolic acid emulsion around the plants in the effort to kill the maggots. But any remedies that are used must be timely and thorough. Further experiments against these pests are being carried on at the present time but so far none had been found which are altogether satisfactory. Phials containing maggots and puparia and pinned specimens of the adult flies were exhibited.

Mr. Davis showed several examples of the pellets formed by the "barred" owl.

He said he had found a number of these and many contained parts of insects. Those shown contained elytra and portions of *Dytiscus fasciventris* which the bird had evidently swallowed.

Mr. Southwick exhibited a box of Carabidæ containing a number of species of *Pterostichus*.

MEETING OF MAY 7, 1907.

Held at the American Museum of Natural History. President C. W. Leng in the chair with twelve members present.

The librarian, Mr. Schaeffer, reported the receipt of the following exchanges :

Deutsche Entomol. Zeitschrift, 1907, No. 2.

Wiener Entomol. Zeitung, XXVI, No. 3.

Proc. Amer. Acad. Arts and Sciences, XLII, No. 6.

Stettiner Entomol. Zeitung, LXVII, No. 2.

Canadian Entomol., XXXIX, No. 5.

Anales del Museo Nacional de Montevideo, Tome III, Entr. I, 1906.

The Secretary read an invitation from the New York Academy of Sciences to participate in the exercises to be held in commemoration of the birthday of Linnæus on May 23.

On motion of Mr. Southwick, the president appointed as members of a committee to act for the society : Messrs. Southwick, Schaeffer and Barber.

Professor Wheeler mentioned some of the ants taken on the excursion at Newfoundland, N. J., among which was a new variety of *Formica exsectoides*, the female of which has a redder abdomen than the common form. He also mentioned a few of the myrmecophilous beetles taken and spoke concerning the habits of a moss which grew upon ants' nests and eventually drove away or exterminated the colony.

Mr. Leng exhibited a few beetles taken on April 28 in the hills made by the ant, *Formica exsectoides*, at Newfoundland, N. J. The species shown were : *Tachys incurvus* Say, *Platophagus parasitus* Lec., *Cedius niegleri* Lec., *Heterius brunneipennis* Rand, *Megastilicus formicarius* Casey, *Cremostochilus castanea* Knoch., *Batriscus fossicauda* Casey, which is new to the New Jersey list of insects. All of the preceding have been recorded as living with ants.

Mr. Schaeffer exhibited some of the insects known as carriers of disease and remarked that the Diptera had more disease carrying or disease breeding members than any of the other orders of insects. He spoke of the mosquito in connection with malaria and yellow fever, the sleeping sickness caused by the tsetse fly in Africa, whose bite caused sickness and death to animals, the Tabanidæ which are troublesome to horses and cattle and instrumental in carrying disease, the house-fly which carries the germs of contagious diseases on its feet and body, ticks which are important carriers of disease, such as Texas fever among cattle. It has not yet been satisfactorily proved that fleas and bed bugs act as agents in carrying disease.

Mr. Dickerson spoke of the great impetus which had recently been given to the study of entomology because of the recognized value of a knowledge of disease breeding and carrying insects.

Mr. Zabriskie gave an interesting and instructive talk on the "Microscopical Examination of External Structures of Hemipterous Insects," illustrated by many lantern slides. Among the species dealt with were *Oncopeltus fasciatus*, *Sinea diadema*, *Acholla multispinosa* and *Phymata wolfei*.

The slides exhibited the microscopical peculiarities of the antennæ, particularly the differences to be noticed at the articulation of the different joints, the mouth parts, the legs in which the spines at the apex of the tibia are a noticeable feature, the wings showing the wing lock and hasp by means of which the two wings are locked together.

Professor Wheeler in behalf of Miss Adele M. Fielde presented to the society a number of separates of papers dealing especially with ants.

On motion the secretary was instructed to thank Miss Fielde for her gift.

H. G. BARBER,

Secretary.